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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/758,825	01/16/2004	Philip S.H. Chen	ATMI-546-CIP-III	6577
25559	7590	09/21/2005	EXAMINER	
ATMI, INC. 7 COMMERCE DRIVE DANBURY, CT 06810			SAINT SURIN, JACQUES M	
			ART UNIT	PAPER NUMBER
			2856	

DATE MAILED: 09/21/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/758,825

Applicant(s)

CHEN ET AL.

Examiner

Jacques M. Saint-Surin

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 07 September 2004 and 16 January 2004.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-38 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-9, 11-28, 30-34 and 38 is/are rejected.
- 7) ☒ Claim(s) 10-17, 29 and 35-37 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 16 January 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 09/07/04.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

A person shall be entitled to a patent unless –

2. Claims 1 and 23 are rejected under 35 U.S.C. 102(b) as being anticipated by Froger (US Patent 3,464,269).

3. Regarding claims 1 and 23, Froger discloses an elongated gas sensor element (detector filament col. 2, line 4, said filament carrier being constituted by an elongated block, col. 7, lines 41-42) formed by one or more gas-sensing filaments (detector filaments D1 and D2, see: col. 4, line 22), said elongated gas sensor element (1) comprising two electrical connection terminals (M, N, see: col. 4, lines 31-37) and having a longitudinal axis, wherein the longitudinal axis of the sensor element is substantially perpendicular to a line defined by the two electrical connection terminals thereof (said filament carrier being constituted by an elongated block, the main axis of which is perpendicular to the axis of said central channel for the passage of the gaseous flow, said block having a groove along the main axis of said block, see: col. 7, lines 41-45).

Regarding claim 23, Froger discloses the cylindrical support in which are mounted the detector filaments D1, D2 supported with the filament carrier 1 of Figs. 2a, 2c, associated with the support. In this case, the extremities 45, 46 of this latter have a

conical shape and an appropriate relief permitting the coupling of the device to flexible piping systems, see: col. 6, lines 61-68.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 2-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Froger (US Patent 3,464,269).

Regarding claims 2-8, Froger does not disclose one or more gas sensing filaments are characterized by an average diameter of less than about 500 microns, 150 microns, 50 microns and an average diameter in a range of from about 0.1 micron to about 30 microns and characterized by a length of more than about 1 cm, 10 cm and 20cm along its longitudinal axis. It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Froger to determine a desired diameter and length for the filament detectors because it has been held that the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. In re Allen, 105 USPQ 233.

6. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Froger (US Patent 3,464,269) in view of Hill (US Patent 5,569,836).

Regarding claim 9, Froger does not disclose a sensor characterized by a wishbone shape. Hill discloses two wishbone members 153 and 154 are pivotally

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attached to the ends of the sensor arms 151 and 152, see: col. 7, lines 63-65. It would have been obvious to one having ordinary skill in the art at the time the invention was made to utilize in Froger the wishbone shape of Hill because it provides a wishbone arrangement which comprises first and second spaced apart arms each pivotally attached to both frame such that they can pivot relative to the sensor arms in one sense only, thereby, making the above combination very effective.

7. Claims 18-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Froger (US Patent 3,464,269) in view of Wezurek et al. (US Patent 6,202,472).

Regarding claims 18-19, 21-22, 26 and 28, they differ from Froger by reciting a nickel copper alloy. Wezurek discloses the arrangement of a plurality of individual, flexurally rigid fabric layers made especially of metals for a flashback barrier for explosion-proof gas sensors, which are permeable to the gas to be measured. The suitable metals include steel, CrNi alloys, pure nickel, MONEL (i.e, an alloy of nickel, copper, iron, and manganese) copper, Al alloys, titanium, or precious metals, individually or combined. It would have been obvious to one having ordinary skill in the art at the time of the invention to utilize in Froger the techniques of Wezurek because they are permeable to the gas to be measured, with an overall thickness of one to ten mm, an overall porosity of at least twenty percent by volume relative to the volume of the flashback barrier (2), and with a maximum number of one percent of all pores with a pore size larger than 240 .mu.m. thereby ensuring that no ignition spark can enter the environment from the measuring space in order to reliably prevent an explosion of the gas mixture in the ambient air.

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8. Claims 24-25 and 33-34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Froger (US Patent 3,464,269) in view of Dimeo, Jr. et al. (US Patent 6,265,222).

Regarding claims 24-25, Froger does not disclose means for detecting a change in at least one property of said elongated gas sensor element upon contact with a target gas species and responsively generating an output signal indicative of presence of said target gas species. Dimeo discloses The CPU may include an electrical resistivity monitor communicating by signal transmission line 48 with the hydrogen sensor device 10, to monitor the change in electrical resistivity of the film element incident to the introduction of hydrogen into contact with the hydrogen sensor device 10, and to responsively generate a corresponding output signal, col. 15 lines 56-62). Dimeo further teaches as shown in FIG. 2, at the beginning of a cleaning process, the plasma gas generated in the resonant cavity includes $\text{NF}_{3.3}$ and SiF_x , (claim 25), see: col. 3, lines 28-31. It would have been obvious to one having ordinary skill in the art at the time of the invention to include in Froger the means of Dimeo because it would maintain an appropriate monitoring status indicative of the presence or absence of hydrogen gas in the environment being monitored thereby, making the above combination more effective and efficient.

Regarding claims 33-34, as discussed above, it is rejected for the reasons set forth for claim 24-25. Furthermore, Froger discloses a gaseous fluid to meet the limitation of fluid locus.

9. Claims 26-28, 30-32 and 38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Froger (US Patent 3,464,269) in view of Dimeo, Jr. et al. (US Patent 6,265,222) and further in view of Wezurek et al. (US Patent 6,202,472).

Regarding claims 26-28 and 38, Froger in view of Dimeo does not disclose a nickel copper alloy. Wezurek discloses the arrangement of a plurality of individual, flexurally rigid fabric layers made especially of metals for a flashback barrier for explosion-proof gas sensors, which are permeable to the gas to be measured. The suitable metals include steel, CrNi alloys, pure nickel, MONEL (i.e, an alloy of nickel, copper, iron, and manganese) copper, Al alloys, titanium, or precious metals, individually or combined. It would have been obvious to one having ordinary skill in the art at the time of the invention to utilize in the combination of Froger in view of Dimeo the techniques of Wezurek because the metals are permeable to the gas to be measured, with an overall thickness of one to ten mm, an overall porosity of at least twenty percent by volume relative to the volume of the flashback barrier (2), and with a maximum number of one percent of all pores with a pore size larger than 240 .mu.m. thereby ensuring that no ignition spark can enter the environment from the measuring space in order to reliably prevent an explosion of the gas mixture in the ambient air.

Regarding claims 30-32, Froger does not disclose one or more gas sensing filaments are characterized by an average diameter of less than about 500 microns, 150 microns, 50 microns and an average diameter in a range of from about 0.1 micron to about 30 microns and characterized by a length of more than about 1 cm, 10 cm and 20cm along its longitudinal axis. It would have been obvious to one having ordinary

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skill in the art at the time the invention was made to modify Froger to determine a desired diameter and length for the filament detectors because it has been held that the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. In re Allen, 105 USPQ 233.

Allowable Subject Matter

10. Claims 10-17, 29 and 35-37 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.


Conclusion


9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jacques M. Saint-Surin whose telephone number is (571) 272-2206. The examiner can normally be reached on Mondays through Fridays 10:30 A.M. -7:00 P.M..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hezron Williams can be reached on (571) 272 2208. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


Jacques M. Saint-Surin
September 18, 2005


HEZRON WILLIAMS
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